

## RF Exposure Report

**Report No.:** SA170619E02A

**FCC ID:** 2ACTO-APX530

**Test Model:** APX 530

**Received Date:** June 22, 2017

**Test Date:** July 06, 2017

**Issued Date:** Oct. 13, 2017

**Applicant:** Sophos Ltd

**Address:** The Pentagon, Abingdon Science Park, Abingdon, OX14 3YP, United Kingdom

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
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### Release Control Record

| Issue No.    | Description       | Date Issued   |
|--------------|-------------------|---------------|
| SA170619E02A | Original release. | Oct. 13, 2017 |

## 1 Certificate of Conformity

**Product:** Sophos Access Point

**Brand:** SOPHOS

**Test Model:** APX 530

**Sample Status:** ENGINEERING SAMPLE

**Applicant:** Sophos Ltd

**Test Date:** July 06, 2017

**Standards:** FCC Part 2 (Section 2.1091)

KDB 447498 D01 General RF Exposure Guidance v06

IEEE C95.1-1992

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**Prepared by :** Wendy Wu , **Date:** Oct. 13, 2017  
Wendy Wu / Specialist

**Approved by :** May Chen , **Date:** Oct. 13, 2017  
May Chen / Manager

## 2 RF Exposure

### 2.1 Limits for Maximum Permissible Exposure (MPE)

| Frequency Range (MHz)                                 | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm <sup>2</sup> ) | Average Time (minutes) |
|---|-------------------------------|-------------------------------|-------------------------------------|------------------------|
| Limits For General Population / Uncontrolled Exposure |                               |                               |                                     |                        |
| 0.3-1.34  | 614                           | 1.63                          | (100)*                              | 30                     |
| 1.34-30   | 824/f                         | 2.19/f                        | (180/f <sup>2</sup> )*              | 30                     |
| 30-300  | 27.5                          | 0.073                         | 0.2                                 | 30                     |
| 300-1500  | ...                           | ...                           | f/1500                              | 30                     |
| 1500-100,000  | ...                           | ...                           | 1.0                                 | 30                     |

f = Frequency in MHz ; \*Plane-wave equivalent power density

### 2.2 MPE Calculation Formula

$$Pd = (Pout * G) / (4 * \pi * r^2)$$

where

Pd = power density in mW/cm<sup>2</sup>

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

### 2.3 Classification

The antenna of this product, under normal use condition, is at least 35cm away from the body of the user.

So, this device is classified as **Mobile Device**.

## 2.4 Antenna Gain

| <b>Radio 1</b>   |                     |       |           |                        |                       |              |                |               |
|------------------|---------------------|-------|-----------|------------------------|-----------------------|--------------|----------------|---------------|
| <b>2.4GHz</b>    |                     |       |           |                        |                       |              |                |               |
| Antenna No.      | Transmitter Circuit | Brand | Model No. | Antenna Net Gain (dBi) | Frequency Range (GHz) | Antenna Type | Connector Type | *Cable Length |
| 1                | Chain (0)           | NA    | NA        | 4.71                   | 2.4~2.4835            | PIFA         | i-pex(MHF)     | 48            |
| 2                | Chain (1)           | NA    | NA        | 3.54                   | 2.4~2.4835            | PIFA         | i-pex(MHF)     | 138           |
| 3                | Chain (2)           | NA    | NA        | 4.6                    | 2.4~2.4835            | PIFA         | i-pex(MHF)     | 145           |
| <b>Radio 2</b>   |                     |       |           |                        |                       |              |                |               |
| <b>5GHz</b>      |                     |       |           |                        |                       |              |                |               |
| Antenna No.      | Transmitter Circuit | Brand | Model No. | Antenna Net Gain (dBi) | Frequency Range (GHz) | Antenna Type | Connector Type | *Cable Length |
| 1                | Chain (0)           | NA    | NA        | 5.5                    | 5.15~5.85             | PIFA         | i-pex(MHF)     | 42            |
| 2                | Chain (1)           | NA    | NA        | 5.76                   | 5.15~5.85             | PIFA         | i-pex(MHF)     | 140           |
| 3                | Chain (2)           | NA    | NA        | 5.91                   | 5.15~5.85             | PIFA         | i-pex(MHF)     | 145           |
| <b>Radio 3</b>   |                     |       |           |                        |                       |              |                |               |
| <b>Bluetooth</b> |                     |       |           |                        |                       |              |                |               |
| Antenna No.      | Transmitter Circuit | Brand | Model No. | Antenna Net Gain (dBi) | Frequency Range (GHz) | Antenna Type | Connector Type | *Cable Length |
| 1                | Chain (0)           | NA    | NA        | 2.95                   | 2.4~2.4835            | PIFA         | i-pex(MHF)     | 74            |

Note: For 1TX/2TX configuration mode, max gain was selected for the final test.

## 2.5 Calculation Result

For 2.4GHz, 5GHz (U-NII-1 & UNII-3 band) and BT-LE data was copied from the original test report (Report No.: SA170619E02)

### For WLAN:

| Frequency (MHz) | Max. Tune-Up Power (dBm) | Max. Tune-Up Power (mW) | Antenna Gain (dBi) | Distance (cm) | Power Density (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) |
|-----------------|--------------------------|-------------------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 2412-2462       | 29                       | 794.328                 | 9.07               | 35            | 0.41654                             | 1                           |
| 5180-5240       | 17                       | 501.187                 | 10.50              | 35            | 0.36530                             | 1                           |
| 5260-5320       | 24                       | 251.189                 | 10.50              | 35            | 0.18309                             | 1                           |
| 5500-5720       | 24                       | 251.189                 | 10.50              | 35            | 0.18309                             | 1                           |
| 5745-5825       | 29                       | 794.328                 | 10.50              | 35            | 0.57897                             | 1                           |

#### NOTE:

2.4GHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 9.07\text{dBi}$

5GHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 10.50\text{dBi}$

### For Bluetooth:

| Frequency (MHz) | Max. Tune-Up Power (dBm) | Max. Tune-Up Power (mW) | Antenna Gain (dBi) | Distance (cm) | Power Density (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) |
|-----------------|--------------------------|-------------------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 2402-2480       | 8                        | 6.31                    | 2.95               | 35            | 0.00081                             | 1                           |

**NOTE:** 1. This power includes tune-up tolerance range that specified in APX 530 Tune-Up power table.

#### Conclusion:

The formula of calculated the MPE is:

$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$

CPD = Calculation power density

LPD = Limit of power density

WLAN 2.4GHz + WLAN 5GHz =  $0.41654 / 1 + 0.57897 / 1 = 0.99551$

**Therefore the maximum calculations of above situations are less than the "1" limit.**

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